What is claimed is:

Sub B1

1. A method for the identification of human subjects to be responsive to a cholinomimetic drug, said subjects having Alzheimer's disease, said method comprising determining the number of copies of *apoE4* gene alleles in said subject, wherein the absence of *apoE4* gene allele in a biological sample of said subject indicates a predisposition to respond to a cholinomimetic drug.

2. The method of claim 1, wherein said method further comprises administering to said subject having an absence of *apoE4* allele a therapeutically effective amount of a cholinomimetic drug.

3. The method of claim 2, wherein administration of the cholinomimetic drug improves cognitive performance.

Sub B2

4. A method for identifying a patient sample in a clinical trial of a drug for the treatment of cognitive impairments, said method comprising:

(a) identifying a patient already diagnosed with said cognitive impairments, or as being predisposed to acquire or to be at risk for said cognitive impairments; and

(b) determining the number of copies of *apoE4* gene alleles in said patient, wherein an absence of *apoE4* allele places the patient into a subgroup for said clinical trial of said drug.

Sub B3

5. A method for identifying a patient sample in a clinical trial of a drug for the treatment of Alzheimer's disease, said method comprising:

(a) identifying a patient already diagnosed with said disease or as being

predisposed to acquire or to be at risk for said disease; and

(b) determining the number of copies of *apoE4* gene alleles in said patient, wherein an absence of *apoE4* allele places the patient into a subgroup for said clinical trial for the treatment of said Alzheimer's disease.

6. A method for identifying a patient sample in a clinical trial of a cholinomimetic drug for the treatment of a disease, said method comprising:

(a) identifying a patient already diagnosed with said disease, or as being predisposed to acquire or to be at risk for said disease; and

(b) determining the number of copies of *apoE4* gene alleles in said patient, wherein an absence of *apoE4* allele places the patient into a subgroup for said clinical trial for the treatment of said a

disease.

7. The method of claim 6, wherein said disease is Alzheimer's disease.

8. The method of claims 1, 2, 3, 4, 5, or 6, wherein said drug is tacrine.